coll. T. G. Vazirani, 1 ♂ Hemawas Dam, Pali, 17.10.1978, coll. J. C. Tripathi.

Measurements:

MALE: Abdomen 19.00 mm., Forewing 23.00 mm., Hindwing 22.00 mm.

FEMALE: Abdomen 17.00 mm., Forewing 20.00 mm., Hindwing 20.00 mm.

ZOOLOGICAL SURVEY OF INDIA,
DESERT REGIONAL STATION,
JODHPUR,
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R. K. THAKUR

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18. A NOTE ON THE ODONATA (INSECTA) FROM SIKKIM, INDIA

(*With nine text-figures*)

Sikkim in the Himalayas has elevations varying between *c.* 350 metres and *c.* 9000 metres. Hill slopes are often covered with forests but patches of agricultural fields are also quite common. As a result of deforestation and other human activities a vast area is devoid of any vegetation, where only exposed rocks are visible. A total of 42 species of Odonata are reported from Sikkim by earlier workers i.e., Asahina (1952-53), Fraser (1933, 1934a, 1934b, 1935a, 1935b, 1935c, 1936a, 1936b, 1940a and 1940b), Kennedy (1936), Kiauta (1972 and 1975), Lahiri (1979), Laidlaw (1915, 1917a and 1971b) and St. Quentin (1970). This study is based on a small collection of Odonata, of these seven species and subspecies are reported for the first time from the area. Intraspecific variations of some species and subspecies studied are incorporated in the text.

Family: EUPHAEIDAE

1. **Bayadera indica** Selys

Material: 1 ♀, Fatak near Mangan, 12.4.81; 2 ♂♂, Khanikhola, 6.7.79 and 2 ♂♂ Rangpo, 7.4.1981.

Distribution: Western Himalayas, Meghalaya and Nepal.

Remarks: A small minute spine also present on the superior anal appendages, cubital nervures 1-2 in number, 25 antenodal and 23 postnodal nervures present in forewings and 21 antenodal and 22 postnodal nervures in hindwings.

Family: GOMPHIDAE

2. **Mesogomphus lineatus** Selys

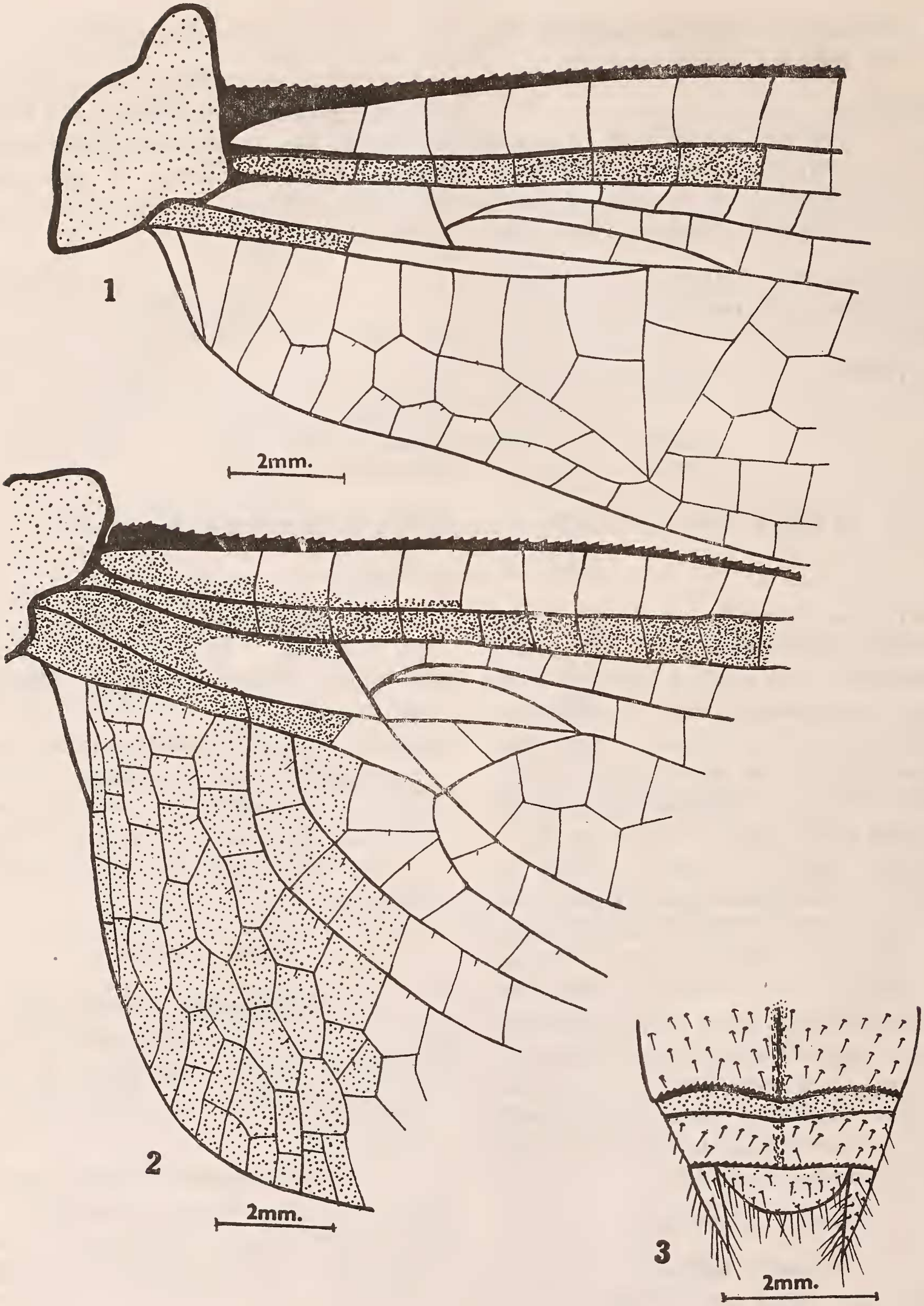
Material: 1 ♂, 1 ♀, Khanikhola, 6.7.79.

Distribution: Western Himalayas, W. Bengal, Maharashtra, Karnataka, Tamil Nadu, Nepal and Burma.

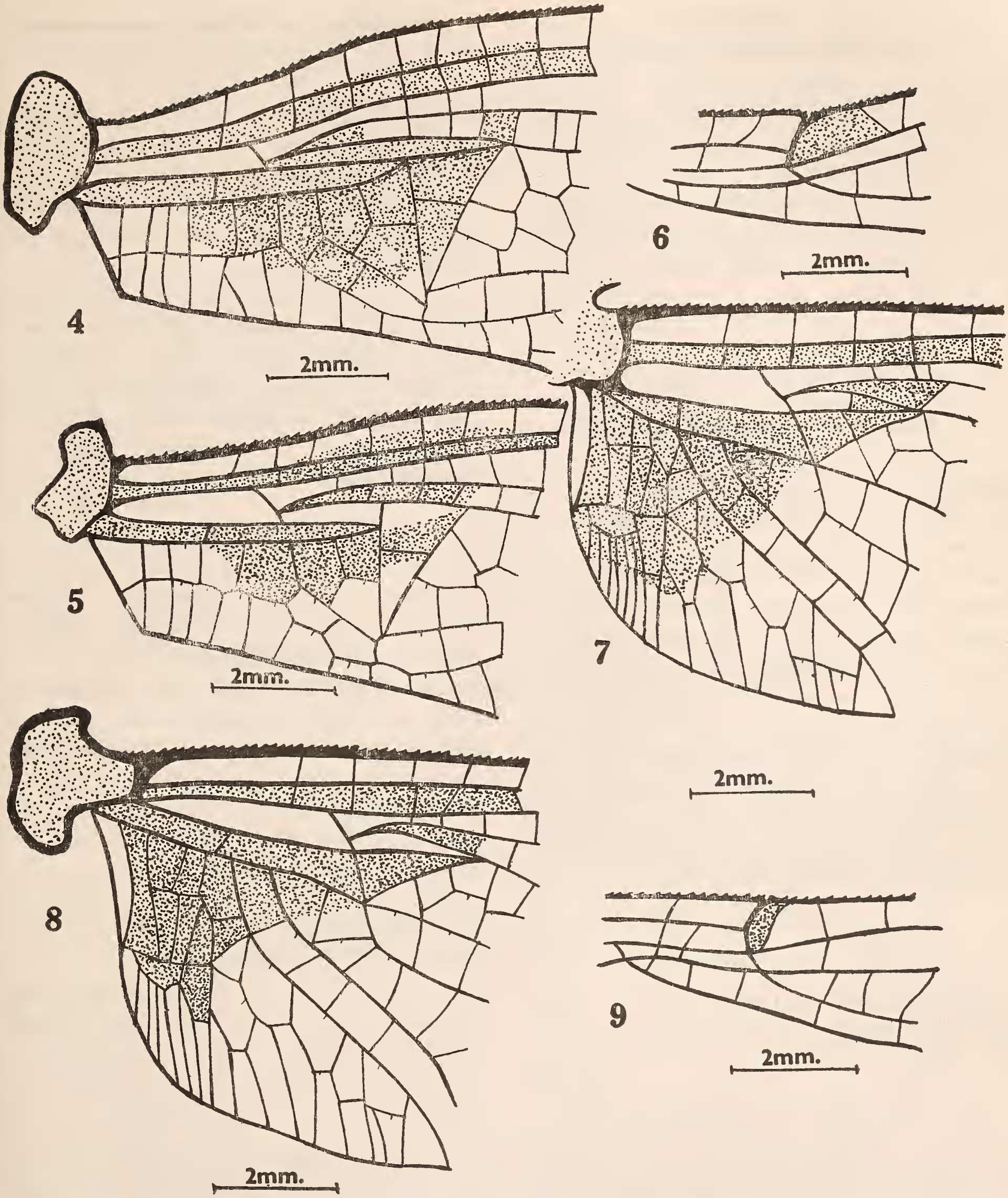
3. **Nepogomphus modestus** Selys

Material: 2 ♂♂, Rangpo, 4.7.1979.

Distribution: Western Himalayas, W. Bengal, Meghalaya. Nagaland, Burma, Malaysia and Sumatra.



Figs. 1-3. Female of *Lyriathemis bivittata* (Rambur). 1. Brown stripe markings in forewing, 2. Brown stripe markings in hind wing, 3. Dorsal view of anal appendages.



Figs. 4-9. Variations in the markings of black stripe in both fore and hindwings of the male specimens of *Palpopleura s. sexmaculata* (Fabricius) (4-6 showing variations in the black stripe markings in forewings, (7-9 showing variations in the black stripe markings in hindwing).

Family: AESHNIDAE

4. **Anax immaculifrons** Rambur

Material: 1 ♀, Rangpo, 6.4.1981.

Distribution: Western Himalayas, Pakistan, British Isles across to Europe, Central Asia and North Morocco.

Remarks: Specimen attracted towards electric light. 6 cubital nervures present in forewings and 4 in hindwings, nodal index —

11–18 | 20–10
—+—
12–12 | 13–11

Family: LIBELLULIDAE

5. **Lyriathemis biyittata** (Rambur)

(Figs. 1-3)

Material: 1 ♀, Khanikhola, 6.7.79.

Distribution: Darjeeling, Assam, Burma, Indo-China and Thailand.

Remarks: Brown stripe in the forewings extends upto 6 nervures in subcosta, whole of cubital nervure (Fig. 1); in hindwing it extends upto 3rd antenodal nervures in costa, 7 antenodals in subcosta, hypertrigone, 2 cells in cubital nervures; brown marking also present on the base of hindwings (Fig. 2); 1 cubital nervure present in forewings and 2 in hindwings; discoidal cell traversed only once in right forewings and hindwings; while twice in left forewing. Nodal index —

9– | 17–10
—+—
11–14 | 13–10

6. **Palpopleura sexmaculata sexmaculata** (Fabr.)

(Figs. 4-9)

Material: 1 ♀, Martam, 16.7.79; 1 ♂, Paglakhola, 19.7.79 and 2 ♂♂, Rangay, 12.7.79.

Distribution: Western Himalayas, W. Bengal, Assam, Bihar, Tamil Nadu, Karnataka, Andhra Pradesh, Malaysia, Indo-China and China.

Remarks: Black stripe present in both fore and hindwings quite variable, even in the specimens collected on same day from Rangay (Figs. 4-9). Discoidal cells traversed only once in right forewing while twice in left forewing, nodal index —

5–11½ | 10½–5
—+—
6–8 | 8–6

7. **Diplacodes nebulosa** (Fabricius)

Material: 1 ♂, Duga, 5.7.79.

Distribution: Western Himalayas, Madhya Pradesh, W. Bengal, Penang, Malaya, Sumatra, Java and Australia.

Remarks: Only one cubital nervure present in both the wings, subtrigone entire, discoidal field begins with two rows of cells, nodal Index—

6–7½ | 7½–5
—+—
5–6 | 6–5

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19. NIGER GRAIN FLY, *DIOZINA SORORCULA* (WIEDEMANN), A SERIOUS PEST OF NIGER IN CENTRAL INDIA

Narayanan (1961) and Rai (1977) listed the insect pests infesting niger [*Guizotta abyssinica* (Linn. f.) Cass] in India, important among which are the safflower caterpillar, *Prospalta* (*Perigea*) *capensis* (Guen.); aphid, *Uroleucon compositae* (Theobold), semilooper, *Plusia orichalcea* (Fab.); surface grasshopper, *Chrotogonus* sp. and curculionid beetle, *Lixus brachyrrhinus* Boh.

During the survey of insect pests of niger at Jabalpur, the grain fly, *Diozina sororcula* (Wiedemann) (Diptera: Taphretidae) was observed for the first time on niger, infesting developing grains in the seed capsule. The female fly lays eggs in the inflorescence in between the disc florets. The eggs are creamy white in colour tapering at one end and measure 0.81 mm in length and 0.16 mm in width. The incubation period lasts for 24 to 72 hours. The freshly hatched maggots bore into the developing seeds and feed on its contents without disturbing the testa and the seed coat of the seed. The maggot completes its life-cycle in a single seed and does not destroy the neighbouring grains. The infested seed does not show any external sign of infestation until the fly emerges out from the seed. Hence, though a high population of the fly exists in the field, it becomes difficult to detect the infestation.

The full grown larva measures 2.2 mm in length and 1.0 mm in width. The larval period lasts for 7 to 12 days. Pupation takes place inside the seed coat. The pupal period lasts for 8 to 15 days. The pupa measures 2.0 mm in length and 1.1 mm in width.